CLAIMS

We claim:

1. A method for equalizing optical signal power in a group of optical signals transmitted through an optical switch in an optical transmission system, the method comprising:

inputting a group of optical signals into an optical switch;

defining a user selected power range; and

attenuating selected optical signals in the group of optical signals such that the signal power of each optical signal in the group of optical signals falls within the user selected power range.

2. A method as in Claim 1 wherein defining a user selected power range includes:

monitoring the optical power of the group of optical signals;

determining the optical power of the weakest signal the group of optical signals, thereby defining a baseline optical power level;

implementing a user selected power margin in combination with the baseline optical power level to define the user selected power range; and

wherein attenuating selected optical signals in the group of optical signals comprises attenuating the optical power of signals which fall outside the user selected power range such that the signal power of each optical signal in the group of optical signals falls within the user selected power range.

3. A method as in Claim 2 wherein the user selected power margin is freely adjustable by a system user.

4. A method as in Claim 2 wherein implementing a user selected power margin in combination with the baseline optical power level to define the user selected power range includes implementing a user selected power margin of about 1 dBm.

5. A method as in Claim 3 wherein monitoring the optical power of the group of optical signals includes:

periodically monitoring the optical power of the group of optical signals; and

wherein determining the optical power of the weakest signal the group of optical signals includes periodically adjusting the baseline optical power level based on changing power values for the weakest signal; and

wherein the user selected power range is subject to periodic adjusting based on changing power values for the baseline optical power level.

6. A method as in Claim 5, wherein said periodically adjusting the baseline optical power level based on changing power values for the new weakest signal includes lowering the baseline optical power level if the power value for the new weakest signal is less than a previous power value for the weakest signal; and wherein the adjusting of the user selected power range comprises implementing the user selected power margin in combination with the baseline optical power level derived from the new weakest signal to define the user selected power range.

7. A method as in Claim 5, wherein said periodically adjusting the baseline optical power level based on changing power values for the new weakest signal includes increasing the baseline optical power level if the power value for the new weakest signal is greater than a previous power value for the weakest signal; and wherein the adjusting of the user selected power range comprises implementing the user selected power margin in combination with the baseline optical power level derived from the new weakest signal to define the user selected power range.

8. A method for equalizing optical signal power in a group of optical signals transmitted through an optical switch in an optical transmission system, the method comprising:

inputting a group of optical signals into an optical switch; and

attenuating selected optical signals in the group of optical signals such that a more uniform power distribution is achieved among the group of optical signals.

9. A method as in Claim 8 wherein attenuating selected optical signals in the group of optical signals such that a more uniform power distribution is achieved among the group of optical signals includes:

monitoring the optical power of the group of optical signals;

determining the optical power of the weakest signal the group of optical signals, thereby defining a baseline optical power level;

implementing a user selected power margin in combination with the baseline optical power level to define a user selected power range; and

selectively attenuating the optical power of signals which fall outside the user selected power range such that the signal power of each optical signal in the group of optical signals falls within the user selected power range.

10. A method as in Claim 9, wherein the optical switch includes at least one movable mirror array having a plurality of reflectors and wherein inputting the group of optical signals includes directing the group of optical signals onto the reflectors; and

wherein selectively attenuating the optical power of signals which fall outside the user selected power range is accomplished by controllably detuning selected reflectors to attenuate the selected optical signals such that the signal power of each optical signal in the group of optical signals falls within the user selected power range.

11. A method as in Claim 10, wherein the at least one movable mirror array comprises a single movable mirror array.

12. A method as in Claim 10, wherein the at least one mirror array comprises at least two movable mirror arrays.

13. A method as in Claim 12, wherein selectively attenuating of optical signals is accomplished by controllably detuning selected reflectors on one movable mirror array of the at least two movable mirror arrays.

14. A method as in Claim 12, wherein selectively attenuating of optical signals is accomplished by controllably detuning selected reflectors on two movable mirror arrays of the at least two movable mirror arrays.

15. A method as in Claim 12, wherein the at least two movable mirror arrays include an input movable mirror array and an output movable mirror array.

16. A method as in Claim 15, wherein selectively attenuating of optical signals is accomplished by controllably detuning selected reflectors of the input movable mirror array and controllably detuning selected reflectors of the output movable mirror array.

17. A method as in Claim 16, wherein each of said reflectors comprise a mirror element and a frame element and wherein said detuning can be accomplished by detuning one of; the mirror element, the frame element, or both the mirror element and the frame element.

18. A method as in Claim 15, wherein variably attenuating selected optical signals is accomplished by variably detuning selected ones of the plurality of reflectors of the input array.

19. A method as in Claim 18, wherein said plurality of reflectors of the input array comprise a mirror element and a frame element and wherein said detuning can be accomplished by detuning one of; the mirror element, the frame element, or both the mirror element and the frame element.

20. A method as in Claim 15, wherein variably attenuating selected optical signals is accomplished by variably detuning selected ones of the plurality of reflectors of the output array.

21. A method as in Claim 20, wherein said plurality of reflectors of the output array comprise a mirror element and a frame element and wherein said detuning can be accomplished by detuning one of; the mirror element, the frame element, or both the mirror element and the frame element.

22. A method for attenuating an optical beam transmitted in an optical switch, the method comprising:

inputting an optical beam into an optical switch having at least one movable mirror array with a plurality of reflectors formed thereon; and

controllably attenuating the optical beam in the switch to obtain a reduced optical power level in the optical beam.

23. The method of Claim 22, wherein inputting the optical beam includes directing the optical beam onto a selected at least one reflector; and

wherein attenuating the optical beam is accomplished by controllably detuning the selected at least one reflector to attenuate the optical beam.

24. The method of Claim 23, wherein the at least one movable mirror array comprises a single movable mirror array.

25. A method as in Claim 23, wherein the at least one mirror array comprises at least two movable mirror arrays.

26. A method as in Claim 25, wherein directing the optical beam onto a selected at least one reflector includes directing the optical beam onto a selected reflector of a first one of the at least two movable mirror arrays and directing the optical beam onto a selected reflector of a second one of the at least two movable mirror arrays.

27. A method as in Claim 26, wherein attenuating the optical beam is accomplished by controllably detuning the selected reflector of the first one of the at least two movable mirror arrays.

28. A method as in Claim 26, wherein attenuating the optical beam is accomplished by controllably detuning the selected reflector of the second one of the at least two movable mirror arrays.

29. A method as in Claim 26, wherein attenuating the optical beam is accomplished by controllably detuning both the selected reflector of the first one of the at least two movable mirror arrays and the selected reflector of the second one of the at least two movable mirror arrays.

30. A method for equalizing optical signal power in a group of optical signals transmitted through an optical switch in an optical transmission system, the method comprising:

inputting a plurality of optical signals into an optical switch;

measuring output the optical power of the plurality of optical signals after they are passed through the optical switch;

selecting a group of optical signals from among the plurality of optical signals in the optical switch;

user selecting an optical power margin;

determining a power range; and

attenuating selected optical signals in the group of optical signals such that the signal power of each optical signal in the group of optical signals falls within the power range.

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